The Claims

What is claimed is:

1. A logically-ordered, spatially-addressable array of molecular construct compounds having a same common molecular core and at least one variable structural diversity element, wherein the compounds composing the array differ from one another by either zero or one change in a single structural diversity element.

2. The array of Claim 1, wherein each molecular construct composing the array is unique.

3. The array of Claim 1, wherein each molecular construct composing the array is the product of a solution-phase reaction.

4. The array of Claim 1 further comprising at least one sub-array, wherein the compounds composing each sub-array differ from one another by either zero or one change in a single structural diversity element.

5. The array of Claim 1, wherein each molecular construct compound is the product of a condensation reaction having at least two components, the first component comprising a first same reactive group and a different first structural diversity element and the second component comprising a second same reactive group and a second structural diversity element, said condensation reaction being carried out under conditions wherein the first and second reactive groups react to form the molecular construct compound.

6. The array of Claim 1, wherein each molecular construct compound is the product of a condensation reaction having at least three components, the first component comprising a first same reactive group and a different first

structural diversity element, the second component comprising a second same reactive group and a second structural diversity element and the third component comprising a third same reactive group and a third structural diversity element, said condensation reaction being carried out under conditions wherein the first, second and third reactive groups react to form the molecular construct compound.

7. The array of Claim 1, wherein the compounds composing the array have from 2 to 5 structural diversity elements.

8. A logically-ordered, spatially-addressable array of compounds, wherein each compound composing the array comprises a same common molecular core, a first structural diversity element and a second structural diversity element, said array comprising a first sub-array and a second sub-array, wherein the compounds composing the first sub-array each have the same first structural diversity element and the compounds composing the second sub-array each have the same second structural diversity element.

9. The array of Claim 8 wherein the compounds composing each sub-array differ from one another by either zero or one change in a single structural diversity element.

10. A method of making a logically-ordered, spatially-addressable array of compounds having a same common core structure and n variable structural diversity elements, said method comprising the steps of:

(a) providing a plurality of reaction vessels organized into n sub-arrays;

(b) adding reactants to each of the reaction vessels in a manner such that when reacted the reactants form the compounds of the array, and such that the compounds composing each sub-array differ from one another by either

zero or one change in a single structural diversity element; and

(c) reacting the contents of each reaction vessel under appropriate conditions to form the compounds of the array.

11. A method of making a combinatorial array of compounds, said method comprising the steps of:

(a) apportioning into reaction vessels that are identifiable by their spatial addresses (i) a first plurality of compounds, each compound in the first plurality comprising a same first reactive group and a different first structural diversity element such that the compounds composing the first plurality differ from one another, with one first compound per reaction vessel; and (ii) a second compound comprising a second reactive group and a second structural diversity element, with one second compound per reaction vessel; and

(b) reacting said first and second compounds under solution phase conditions wherein the first and second reactive groups react with one another by an addition reaction to form a compound, thus forming the combinatorial array of compounds.

12. The method of Claim 11 further including the step of formatting the contents of the reaction vessels into a spatially-addressable array.

13. The method of Claim 10, 11 or 12, wherein each base module compound in the array is unique.

14. A method of identifying a compound having a property of interest, said method comprising the steps of:

(a) providing an array of compounds according to any one of Claims 1-9; and

(b) identifying which compounds in the array exhibit the property of interest.

15. The method of Claim 14 wherein the compound having the property of interest is identified by screening the array against a particular target.